Volunteers Gather Baseline Data on Coral Reef Health

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You can be sure of one thing when it comes to ecosystems- they change constantly. Coral reefs are no exception and they change due to natural and human factors. Documenting and explaining requires that reefs be monitored for the long-term and that a baseline or reference condition be established. The Sanctuary's Zone Monitoring Program is designed to address this challenge by utilizing volunteers to assist managers and scientists in tackling the problem of monitoring ecosystem change (see related article in Oct/Nov 1997 issue of Sounding Line).

In 1997, volunteers helped establish a baseline inside and outside of the Sanctuary's zones by participating in an international coral reef monitoring effort called Reef Check. Establishing a baseline is essential because it gives managers a point of reference from which to gauge the change in our coral reef ecosystem. As long as monitoring methods are consistent from year to year than the baseline remains valid. The protocols for Reef Check were designed so they could be applied throughout the world to allow the comparison of data. This resulted in some limitations of the Keys' data but, nevertheless, a baseline now exists that can be compared with future years, assuming the same methodologies are used.

Experienced volunteer divers were matched with marine scientists to learn how to use scientific equipment, conduct underwater surveys, and recognize species native to their area. In the Florida Keys, 23 reef sites were surveyed this past summer, with 66 volunteers committing an amazing 1487 hours of their time. The Florida Keys Reef Check 1997 effort was also significant because volunteer divers gathered information inside the Sanctuary's new no-take zones. The 1997 baseline data from the Sanctuary Preservation Areas, Research-only Areas, and Ecological Reserve will be useful in determining the long-term effectiveness of these zones in protecting coral reef habitats.

The results from Reef Check 1997 included some disturbing results here in the Florida Keys. The overall occurrence of algae was high with estimates of algae cover ranging from 0% to 61.2% throughout the Keys' reef tract. In comparison, percent cover of hard corals ranged from 0% to 40%. The ratio of the amount of coral versus algae present was used as an measure of an individual reef's relative health. Using this standard, Sombrero Reef and Cheeca Rocks were found to be the "healthiest" reefs at the depths surveyed.

Reef Check is an international volunteer reef monitoring program for coral reefs. Reef Check divers also record their observations on certain fish and invertebrate species while underwater. (Photo: Mike White)

Reef Check divers also recorded their observations of certain fish and invertebrate species while underwater last summer. This activity was based on the assumption that the certain species may offer clues about the overall health of an ecosystem. Measuring the abundance of these "indicator species" provides us with necessary baseline data and a possible glimpse at how interrelationships between the coral reef organisms may be changing. For the indicator fish counted, members of the grunt family were seen in the highest numbers, while groupers were sighted on only two of 23 reefs with a total of just four seen. Reef Check results confirmed that long-spined Diadema urchins have not recovered from the widespread 1983 die off. A mere 14 Diadema were counted, with two being the maximum number sighted at one location. A total of three queen conch and one helmet conch were observed. Spiny lobster were more prevalent and appeared at 19 of 23 locations surveyed, with a maximum occurrence of seven.

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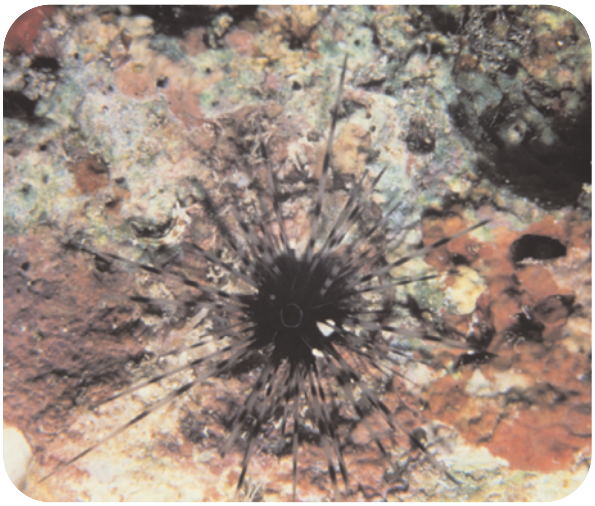

Reef Check results from 1997 showed that long-spined sea urchins, *Diadema antillarum*, had not recovered from the widespread die-off they suffered in 1983. These urchins are important herbivores that graze algae from the reef creating favorable habitat for the settlement of new corals. (Photo: Paige Gill)

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International Reef Check 1997 results from 230 sites throughout the world revealed an average of 31% living coral cover, with Caribbean reefs having the lowest mean percent cover overall. Indicator species from each geographical area showed varying levels of abundance. For example, in the Indo-Pacific region only 25 lobsters were sighted on over 175 coral reefs, and sea cucumbers were totally absent from almost half of these reefs. The global ReefCheck data also offered some insight into the use of marine zoning as a management and conservation tool, as many countries reported higher numbers of indicator species located inside protected areas.

Whether surveying hard corals, counting fish, or operating boats, Reef Check volunteers of the Keys contributed significantly to the Level III component of the Sanctuary's Zone Monitoring Program in 1997. The summer of 1998 is full of even more opportunities for residents and visitors to get involved in collecting information on the unique marine environment of the Florida Keys.

For more information on Reef Check, visit: **www.reefcheck.org.**

Note: This article appeared in the Fall 1998 issue of the newsletter of the Florida Keys National Marine Sanctuary, **Sounding Line**. *For more information, visit:* floridakeys.noaa.gov**.**